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COVID-19 IMPACT ON THE CAPITAL STRUCTURE OF COMMERCIAL BANKS: EVIDENCE FROM THE WESTERN BALKANS[3]

This study aims to measure the influence of COVID-19 on the capital structure of Western Balkans commercial banks, before and during COVID-19 using annual data for the period 2015 - 2020. Using pooled ordinary least squares regressions, the relationship between bank book leverage as the dependent variable and bank-specific explanatory variables such as profitability, Tier 1 capital, bank size, collateral, earnings volatility, and liquidity is investigated. COVID-19 as an independent variable is also presented in this paper. GDP and inflation are control (constant) variables that influence the outcome. By regressing the panel data, we conclude that the comparison of factors affecting the capital structure of the respective commercial banks, in the form of profitability, leverage ratio, size, collateral, earnings volatility and liquidity, before and during the COVID-19 pandemic, tend to have significantly different values.
Keywords: Capital structure; COVID-19; book leverage; banking sector; Western Balkans
JEL: G23; G30; G32

1. Introduction

COVID-19 had an impact on the banking sector, which was an important component of the economic development of the Western Balkans. The pandemic affected banking activity in various ways, including increased efforts and expenses to ensure the safety of staff and customers; the need to reorganize much of the movement to employ a remote work strategy; a decrease in income due to the slowdown in lending activity, especially during the first half of 2019, as well as an increase in loan provisions due to the deterioration of the borrowers' financial situation. Despite the unpredictability of growth, the banking sector remained stable and liquid throughout the COVID-19 epidemic, testing the resilience of the Western Balkans economy in general and the banking system in particular.

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Regarding the dilemma of whether COVID-19 is a financial crisis or not, there are different statements. Thus, Bonam & Smădu (2021) in their study stated that COVID-19 is not a financial crisis and we cannot compare this pandemic with past pandemics as times have changed, which caused changes in the size and structure of economies gripped by these pandemics. Other authors, reasoning empirically, found that COVID-19 is the main source of the economic crisis due to the reduction of productivity, disrupting the supply, which further created the demand during the financial crisis, thus also the economic disruption (Fuentes, Moder, 2021).

Other authors, while agreeing that COVID-19 is a type of crisis, presented another dilemma, namely, they gave conflicting opinions about what kind of crisis COVID-19 is. The possibilities of the impact of COVID-19 on the capital structure have been widely addressed in the literature. Firms aim for a specific capital structure and scale that achieves the firms' objectives, and deviation from this structure can cause systemically unhelpful distortions by forcing firms to make debt and equity decisions. In such cases, it is appropriate to apply numerous theories that have found support in the literature, about how firms choose their capital structures, such as the trade-off theory, the takeover theory, and the marketing theory. Authors Chauhan & Banerjee (2019) and Abbas et al. (2020) clarify this issue more than others. It is worth to mention that there was not available any same research topic, covering the developing countries from Southeast Europe.

As analyzed below, our paper adds to the literature related to the impact of COVID-19 on the capital structure by documenting convergence speeds with target leverage ratios in the context of COVID-19. This type of analysis is particularly important because capital structure decisions are critical to other economic decisions in the organization at different stages of a firm's life cycle. We also extend the literature on target capital structures by demonstrating that firms adjust to leverage targets faster during the COVID-19 economic crisis than in non-crisis times.

2. Literature Review

Bank capital structure refers to how banks finance their balance sheets, and its determinants are still poorly understood despite receiving considerable attention in the recent empirical literature. However, nonfinancial firms' capital structure decisions have been extensively covered in corporate finance literature. The trade-off and pecking order theories have been the most empirically tested of the many capital structure theories, with evidence in favour of both. Some notable studies (Rajan, Zingales, 1995; Benito, 2003; Hoque, Kashefi-Pour, 2015; Tran et al., 2020). Most research on this topic has focused on identifying the variables that influence corporate finance behaviour, particularly in American corporations. Rajan & Zingales (1995) made the first attempt in this manner when they discovered the same factors affecting the determinants of corporate financing in the US and the G-7. The following

research has focused on the United States or wealthy countries (Rajan, Zingales, 1995; Khaki, Akin, 2020).

Despite the fact that developed countries with similar institutional systems and features have received the majority of the attention, there has been less research on the factors influencing capital structures in developing countries. (Booth et al., 2001) carried out some of the most significant and pioneering research on testing capital structure theories in emerging nations. The study aimed to determine whether the factors influencing capital structures in industrialized countries might be applied to developing nations. Despite significant disparities in the institutional system, the findings showed that the same determinants drove business-funding behaviour in emerging nations and industrialized ones.

Short-term liabilities, long-term liabilities, company size, tangible assets, profitability, risk, company growth, interest coverage ratio, bank capital, asset quality, return on assets, liquidity, etc. are just some of the factors discussed in the capital structure literature and that theoretically and practically can affect the Leverage ratio (Sibindi, 2018; Kamil et al., 2020; Sriram, Khan, 2020; Gardi et al., 2020: Deneke, Gujral, 2021).

In contrast to non-financial institutions, several studies on the determinants of capital structure have been conducted in financial institutions, mainly from banks' perspectives. Banking literature has primarily attributed capital structure to regulatory requirements or bank-specific factors. The literature identifies bank-specific factors such as liquidity, profitability, size, asset tangibility, earnings volatility, tax rate, and growth. Theories predict contradictory effects of these factors on bank capital structure.

Using agency theory, Chechet & Olayowola (2014) evaluated the influence of capital structure on bank profitability in Nigeria. The results of the study showed a negative relationship between the capital structure and profitability of the banks studied, which contradicts the agency theory. The authors also failed to adequately describe the practical implications of their findings, which contradicts agency theory. In other words, their statistics show that increasing debt has no effect on reducing agency costs and thus increasing shareholder value. The authors provide no practical explanation for why the results were presented in this way. Sibindi (2018) examines the relationship between Leverage and the determinants of capital structure in a sample of 16 South African banks from 2006 to 2015, demonstrating that growth opportunities, risk, and size variables were positively related to Leverage, while profit and financial crisis variables were negatively related to Leverage.

Vishnu (2019) examines the impact of capital structure on the financial performance of small financial institutions in India over two years, from 2017 to 2018. The study investigates how capital structure influences bank financial performance and how financial Leverage influences that connection. The debt-to-total assets and debt-to-equity ratios evaluate the capital structure, whereas the return on capital employed, net profit ratio, and net interest margin assess financial performance.

Abeysekara (2020) investigates the capital structure determinants of nine Sri Lankan banks listed on the Colombo Stock Exchange between 2007 and 2019. Leverage was the dependent variable, while the independent variables were GDP growth rate, inflation, bank size, return on assets, taxes, profitability, and total debt-to-equity ratio. According to the study, the debt-

to-equity ratio is a critical driver of the capital structure of banks in Sri Lanka. However, GDP growth, inflation, bank size, return on assets, and profitability were discovered to have no statistically significant impact on the capital structure of Sri Lanka-listed banks.

Deneke & Gujral (2021) base their research on determining the impact of capital structure on the financial performance of Ethiopian commercial banks. Based on the data analysis, it is concluded that the capital structure significantly influences operational profit and net profit. Still, it has no significant effect on the return on assets, return on equity, and return on capital employed.

3. Methodology

The study is descriptive research that relies on secondary data sources, specifically from audited six-monthly financial statements of commercial banks in the Western Balkans (from 2015 to 2020). The study sample included 40 commercial banks, yielding 480 bank-year observations. The data were generated from financial statements of Commercial Banks for six countries of South East Europe: Albania, Bosna and Herzegovina, Kosovo, FYR Macedonia, Montenegro and Serbia. Regarding the Banks selected, no specific criteria were used. Bank data were used to allow the researcher to conduct an in-depth examination of the samples taken for the given time period in order to examine the determinants of capital structure and their movements during the study period including the COVID-19 period (2020). The study used existing literature definitions of variables for a relevant comparison of the findings with prior investigations. In accordance with the leverage definition, book leverage is chosen as a dependent variable to represent the banks' capital structure, just as Merve & Cevheroglu, 2018; Sibindi & Makina, 2018; Sriram et al., 2020; Deyganto, 2021.

The regressors chosen based on several empirical studies primarily correspond to empirically identified bank-level capital structure determinants in terms of independent variables. Profitability and the leverage ratio Capital structure is determined by bank size, collateral, earnings volatility, liquidity, and COVID-19. They were summarized and analyzed in various components in order to test the relationship between these variables with the multiple regression equation and SPSS. The variables gross domestic product (GDP) growth and inflation rate (INF) are used to control macroeconomic influence.

The following methods were used to empirically investigate the determinants of bank capital structure in this study:

Descriptive statistics were used to characterize the minimum, maximum, mean, and standard deviation values of the dependent (BLV), and independent and control variables (PROF, RCAP, SIZE, COL, EVOL, LIQ, COVID-19, GDP, and INF). The Pearson correlation test was used to assess the strength of the relationship between dependent, independent, and control variables. The variance inflation factor (VIF) examines whether or not the independent variables are multicollinear. A linear regression analysis for the entire sample was done to discover the critical component of work that contributed more to protecting the

bank's capital structure determinants and determine the impacts of COVID-19 on capital structure determinants.

Following (Assfaw, 2020; Guizani & Ajmi, 2020; Castro & Lopes, 2021; Oliveira & Raposo, 2021), book leverage has been used as a proxy for capital structure. The following regression model is applied for this purpose:

$$BLV_{i,t} = \alpha + \beta X_{i,t} + \varepsilon_{i,t}$$

where:

BLV is the book leverage,

X – vector of firm-specific variables,

ε – the error term.

The study adopted econometric models for the two periods involved. The first model evaluates the period before the COVID-19 pandemic (beginning with the year 2015) in the capital structure and the second model evaluates the period from 2015 – 2020 including the COVID-19 period:

$$BLV_{it} = \beta_0 + \beta_1 PROF_{it} + \beta_2 RCAP_{it} + \beta_3 SIZE_{it} + \beta_4 COLL_{it} + \beta_5 EVOL_{it} + 6\, LIQ_{it} + +\varepsilon_{it} \quad (1)$$

$$BLV_{it} = \beta_0 + \beta_1 PROF_{it} + \beta_2 RCAP_{it} + \beta_3 SIZE_{it} + \beta_4 COL_{it} + \beta_5 EVOL_{it} + \beta_6 LIQ_{it} + \beta_7 Covid + \beta_8 LnGDP_{it} + \beta_9 LnINF_{it} + \varepsilon_{it} \quad (2)$$

For our analysis of the impact of the COVID-19 pandemic on the capital structure of commercial banks in the Western Balkans, we have chosen six main variables such as profitability, leverage ratio (tier-1 capital), bank size, collateral, earning volatility, and liquidity, all of which to meet our objectives. Empirically, we use COVID-19 as a global crisis variable to see its impact on capital structure, risk behaviour, and financial stability. Therefore, based on (Moudud-Ul-Huq, 2020; Mohammad, 2021), we use Covid as a dummy variable to address the impact of COVID-19. Table 1 details the approved definitions and basis for the dependent, independent, and control variables.

The first variable is Book leverage – defined as the percentage of debt used by businesses to acquire additional assets. Rajan and Zingales (1995) proposed four alternative definitions for financial leverage, the ratio of total liabilities to total assets, the ratio of debt to total assets, the ratio of total debt to net assets, and the ratio of EBIT to interest expense. Among these definitions, the ratio of total liabilities to total assets is thought to be the broadest; it can be viewed as a better proxy for what is left for shareholders in the event of liquidation. This definition is also supported by (Ali et al., 2015). For these reasons, the ratio of total liabilities to total assets is used as an indicator in this paper.

The second variable is Profitability. Each capital structure theory predicts different effects of a firm's profitability (PROF) on its choice of debt and equity. For instance, the trade-off theory suggests that businesses with positive earnings before taxes aim for larger Leverage ratios to take advantage of tax breaks. Hence it anticipates that profitability and Leverage

will be positively correlated. Many authors prove this conclusion (Neves et al., 2019; Lutfi et al., 2020; Deyganto, 2021). On the other hand, the pecking order theory foresees a conflict between profitability and Leverage. According to this theory, more profitable firms borrow less because they have adequate internal funds for their capital investment programs.

Table 1. Measurements of Dependent and Independent Variables

Variables	Symbols	Proxy:
Dependent variable		
Book leverage	BLV	Computed as 1 - (book value of debt/book value of assets)
Independent variables		
Profitability	PROF	Computed as the ratio between the sum of pretax profit and interest expenses and the book value of assets
Bank size	Size	The logarithm of the book value of assets
Collateral	COL	Computed as the ratio between the sum of the following items: "total securities," "fixed assets," and "cash and due from banks" and the book value of assets
Earnings volatility	EVOL	The ratio of (profit after taxes t - profit after taxes t-1) to profit after taxes t-1
Bank Liquidity	LIQ	The loan-to-deposit ratio assesses a bank's liquidity by comparing its total loans and advances to its total deposits for the same period.
COVID-19	Covid	A dummy variable (0 for the period 2015-2019 and 1 for 2020)
Control variables		
GDP	LnGDP	Natural log of Economic Activity
Inflation	LnINF	Natural log of Inflation

The third variable is the Leverage ratio (tier 1 capital). A leverage ratio is one of several financial metrics that examines the amount of capital borrowed (via loans) and assesses a company's ability to pay its debts. The leverage ratio category is critical because businesses typically use a combination of debt and equity to fund their operations.

The fourth variable is Bank size (BSz) – the logarithm of total assets. According to trade-off theory, large firms often have a higher borrowing capacity, which leads to higher Leverage ratios. According to the pecking order theory, the largest firms with internal resources typically use these funding sources. Thus, this theory anticipates a negative relationship between firm size and leverage. According to agency theory, big firms with weak ownership use debt to reduce agency and transaction costs.

The fifth variable is collateral (COLL) – sometimes represented as a percentage of the entire book value of the assets divided by the book value of the physical assets that may be used as security.

The sixth variable is Earnings volatility. According to the trade-off theory, a firm's Leverage and earnings volatility (EVOL) are incompatible. Because the company is contractually obligated to fulfil debt-related obligations by issuing debt, it is predicted that an unstable company's earnings may reduce its borrowing ability. These payments may put you in financial trouble if the company's earnings are inconsistent. Additionally, a tax shield may not provide the obligated company with as many advantages during periods of poor revenues. Empirical data, however, shows a range of outcomes. Arsov & Naumovski (2016) and Merve & Cevheroglu (2018) for instance, found no correlation between changing wages and debt

ratios. However, the findings of (De Jong et al., 2008) were congruent with the hypothesis of the trade-off theory.

The seventh variable is Liquidity. Several studies employed liquidity (LIQ) as an independent variable to assess its possible influence on business Leverage. Simply put, liquidity is a company's capacity to satisfy its short-term obligations. According to (Ozkan, 2001), a high liquidity ratio indicates that a company has more ability to pay its debt when it falls due. This study defines liquidity as the ratio of total loans and advances to total deposits.

The last variable is COVID-19 – a dummy value that takes values of 1 (one) from 2020 and measures the impact of COVID-19. Other researchers have used this method to assess the impact of COVID-19 (Hauser et al., 2021; Mohammad, 2021).

Aside from the previously mentioned internal factors, several studies on banks and capital structure have used macroeconomic determinants as external factors (Mokhova, Zinecker 2014; Bashir et al., 2020). According to Mokhova and Zinecker (2014), the most commonly used external factors in capital structure design are GDP growth and inflation rate. As a result, the current study uses GDP growth and inflation as control variables to account for the impact of macroeconomic indicators on capital structure decisions.

4. Empirical Results and Discussion

This section presents the descriptive statistics of dependent and independent variables used in the study for the sampled banks in Western Balkan. The dependent variables used in this study were capital structure (Leverage). In contrast, the independent variables were profitability, bank size, earnings volatility, collateral, and liquidity of selected banks. Table 2 shows the mean, highest, lowest, and standard deviation of the dependent and independent variables, throughout the study,

Table 2. Summary statistics of the variables for the period 2015-2020

Variable typology	Variable	N	Minimum	Maximum	Mean	Std. Deviation
Dependent	BLV	240	0.079	0.964	0.843	0.107
Independent	PROF	240	-0.103	0.402	0.008	0.038
	RCAP	240	0.004	0.124	0.029	0.020
	Size	240	5.848	15.627	12.940	1.680
	COLL	240	0.011	0.753	0.267	0.162
	EVOL	240	-9.626	9.174	0.138	2.289
	LIQ	240	0.000	4.065	0.796	0.415
	Covid	240	0.000	1.000	0.195	0.397
	LnGDP	240	1.662	5.418	3.844	0.658
	LnINF	240	-2.632	2.775	0.764	0.822

Source: Authors' calculations.

The mean value for the dependent variable (BLV) for the study period was 0.843 percent, suggesting that 84.3 percent of the assets of Western Balkan banks were debt. In contrast, the standard deviation within this data set was 10.7 percent. This also demonstrates that most

banks in the Western Balkans have limited financial autonomy. This Leverage may be primarily due to Western Balkan banks, which mobilize and collect deposits from the public (Assfaw, 2020). The highest value of the total liabilities to total equity ratio is 96.4 percent, while the lowest number is 7.98 percent.

The following independent variables should be highlighted: Profitability (whose chosen proxy is PROF) provides a mean of 0.008, indicating that 0.8 cents before tax were created from a 1 Euro investment in bank assets. This conclusion is lower when compared to previous empirical investigations conducted on the US and other European banks (Gropp, Heider, 2010; Miles et al., 2012; Gibson et al., 2016). The standard deviation of profitability is 0.038, and the range is from -0.103 to 0.402. In addition,

Tier-1 Capital expressed as RCAP, has a mean of 0.029, with a standard deviation of 0.020, 0.004, and 0.124 minimum and maximum respectively. Bank size (SIZE) is measured as Ln of total assets and has a very high mean of 12.94 with a range from 5.848 at the lowest to 15.627 at the highest and a standard deviation of 1.685. The mean of collateral (COLL) is 0.267, the standard deviation is 0.162, and the range is from -0.115 to 0.753 for the minimum and maximum values. The mean of earning volatility (EVOL) is 0.138, and the standard deviation is 2.289. The minimum collateral is -9.626, and the maximum of 9.174. Liquidity provides a mean of 0.796, the least liquidity rate was minus 0.000, and the most considerable liquidity rate recorded throughout the research period was 4.065, which deviates from its mean value on both sides by 0.415 percent. The mean value of Covid is 0.195, with a minimum of 0.00, a maximum of 1.00, and a standard deviation of 0.397. Control variables, such as GDP and INF has a mean of 3.844 and 0.764 respectively.

The Pearson correlation quantifies the strength of the linear relationship between two variables. For clarity, Pearson's correlation coefficient determines the degree of the linear relationship between two continuous variables. Table 3 shows the findings of the correlation analysis, which is based on the connection between the dependent and independent variables. This point illustrates that all explanatory variables are interrelated. In other words, this is an attempt to avoid the problems associated with multicollinearity. All correlations between the independent variables are smaller than 0.80, as expected. As a result, it appears that there are suspicious examples of multicollinearity affecting the research variables. (Assfaw, 2020) The predictor variables' variance inflation factor (VIF) should not be greater than 5 to rule out multicollinearity.

Also, the reciprocal of the VIF is greater than 0.20. These numbers revealed the absence of multicollinearity.

At a substantial level of 75.1%, Leverage shows a positive connection with profitability ($r = 0.249$, $p = 0.00$).

Bank size also has a positive but not statistically significant link with leverage at 88.9 percent ($r = 0.111$, $p = 0.117$). Collateral shows a positive but not significant association with leverage at 99.7 percent ($r = 0.003$, $p = 0.970$), and earning volatility shows a negative significant correlation with BLV at 88.58 percent ($r =- 0.142$, $p = 0.045$). Liquidity has a negative correlation of 39.40 percent ($r = - 0.606$, $p = 0.00$), and crisis (COVID-19) as a

dummy variable has a positive correlation with leverage of 91.7 percent (r = - 0.083, p = 0.243). GDP and INF have a negative not significant correlation with BLV.

Table 3. Pearson Correlation Coefficients and VIF test

Variable	BLV	PROF	RCAP	Size	Coll	Evol	LIQ	Covid	LnGDP	LnINF	VIF	1/VIF
BLV	1											
PROF	0.249**	1									0.907	1.184
	0.000											
RCAP	-0.066	-0.019	1								0.946	1.058
	0.353	0.780										
Size	0.111	0.070	0.014	1							0.927	1.078
	0.117	0.327	0.849									
COLL	0.003	-0.085	0.134	0.013	1						0.771	1.296
	0.970	0.232	0.053	0.852								
EVOL	-0.142*	-0.182*	0.133	0.065	-0.013	1					0.932	1.072
	0.045	0.010	0.062	0.363	0.860							
LIQ	-0.606**	-0.159*	-0.136	-0.195**	-0.409**	0.050	1				0.743	1.347
	0.000	0.024	0.056	0.006	0.000	0.486						
Covid	0.083	-0.042	-0.060	0.044	0.018	-0.020	-0.028	1			0.962	1.039
	0.243	0.558	0.416	0.537	0.801	0.777	0.696					
LnGDP	-.025	-.027	0.020	-.084	-.125	-.082	-.029	-.089	1		0.923	1.083
	.728	.709	-	.235	.079	.249	.685	.208				
LnINF	-.021	-.009	-0.062	.128	-.045	.021	-.029	-.116	-.142*	1	0.936	1.068
	.767	.901		.071	.530	.766	.679	.101	.045			

*Notes: ***p < 0.01; **p < 0.05; *p < 0.10*
Source: Authors' calculations.

Two periods were used to estimate the Fixed Effect study model. An FE was used in this study to determine whether there is a statistically significant relationship between the independent variables and the dependent variable, allowing us to assess the impact of capital structure determinants on the leverage ratio of Western Balkan banks, a first for the period before COVID-19, and the second for the period from 2015 to 2020, including the period of COVID-19. Table 4 summarizes the results of these two periods:

Table 4. Estimations and Tests of Significances

Fixed effects, Huber – White Robust standard errors

Variables	Pre-COVID-19 (Model 1)			Including the COVID-19 Period (Model 2)		
	β (Std)	t	Sig.	β (Std)	t	Sig.
(Constant)	1.000	16.971	0.000***	3.685	4.115	0.000***
PROF	0.325	1.577	0.117	1.784	1.814	0.071*
RCAP	−0.065	−5.817	0.000***	−5.975	−1.715	0.088*
BSz	−0.001	−0.502	0.616	−0.019	−2.075	0.039**
COLL	−0.214	−4.598	0.000***	−1.444	−1.815	0.071*
EVOL	−0.001	−1.836	0.068*	0.003	0.865	0.387
LIQ	−0.190	−6.112	0.000***	−1.556	−2.239	0.026**
Covid				0.015	1.127	0.261
LnGDP				−0.225	−7.530	0.000***
LnINF				−0.110	−5.385	0.000***
R squared			0.517			0.465
Within R-squared			0.507			0.465
Durbin-Watson			2.006			1.970

Table 4 has two sections: The first period was the COVID-19 pre-pandemic period, during which model I was located. We incorporated the COVID-19 pandemic period into the pre-pandemic period, where model II is located, in the second period. We only included the bank-specific variables in model I. In Model II, we included macroeconomic control variables in addition to bank-specific variables to examine the impact of bank-specific variables and macroeconomic variables on banks' capital structure.

The coefficient of determination, R-squared, in model 1, has a value of 0.517. This means that our regression model accounts for approximately 52% of the variation in capital structure. As shown in Table 4 model 1, the model has no autocorrelation (Durbin-Watson d-statistic around 2).

Model 1 results show that bank leverage ratio, collateral, earnings volatility and liquidity all play a role in Western Balkan banks' capital structure decisions. According to Table 4, the results of Fixed effects in Model 1 show that the leverage ratio has a statistically significant negative coefficient (-0.065), as collateral with a coefficient of -0.214 and liquidity with a coefficient of -0.190, statistically significant at 1%. In addition, the p-value for earnings volatility is significant at a value of $0.068 < 0.1$ and negative at a coefficient of -0.001 with respect to capital structure. Profitability has a positive effect (0.325) on capital structure but is statistically not significant ($p = 0.117$), while bank size has a negative impact and statistically no effect on capital structure with a coefficient of -0.001 ($p = 0.616$).

In model 2 of Table 4, the results are given including the entire study period, including the variable of COVID-19 as a dummy variable and two control macroeconomic variables (GDP and Inflation). In this case, bank profitability has a positive effect (with a coefficient of 1.784) on capital structure. It is assumed that for each percent increase in profitability. The profitability value is 0.071, less than the 10 percent significance level. This relationship endorses the trade-off theory. The finding aligns with the other studies (Antoniou et al., 2008; Neves et al., 2019; Lutfi et al., 2020; Deyganto, 2021).

Unlike liquidity, the leverage ratio coefficient value is (-5.798). Each one percent decrease results in a 579.8 percent increase in book leverage. The RCAP conclusion is consistent with the data (Allegret et al., 2017), which shows that capital requirements induce a non-linearity in bank behaviour when capital falls to levels extremely close to the regulatory minimum. It is found that the leverage ratio has a significant impact on banks' capital structure before or during the Covid crisis.

Bank size, during the entire period, has a negative significant effect on book leverage at a 5% level on capital structure. The probability value of bank size is 0.039, which is less than the 0.05 percent significance level. The negative sign suggests a reduction in the size of the overall impact on the capital structure during the entire period (with the Covid period). Logically, the size of the bank should have a significant impact on capital structure, and our results confirm this. This relationship supports the trade-off theory. The current study's findings are similar to those of (Lutfi and Suyatno, 2019; Neves et al., 2019; Assfaw, 2019; Wardhani, Mongid, 2019).

Collateral has a significant negative relationship with book leverage at the level of 0.1, which means less than 10 percent. The coefficient of collateral is -1.444. The negative relationship

does not support the trade-off and pecking order agency theories that show a positive relationship between collateral and leverage. The results of the current study are similar to the findings of (Sheikh, Qureshi, 2017; Dakua, 2019; Doan, 2019). When the pre-COVID-19 period is compared to the entire period (including the COVID-19 period), the collateral has a greater impact on the capital structure in the pre-Covid period. This has influenced the reduction of the impact of collateral on the capital structure over the entire COVID-19 period.

The study depicts a negative relationship between liquidity and capital structure. The coefficient of liquidity is -1.556 Consistent with those (Güner, 2016; Ullah et al., 2017; Sakunasingha et al., 2018), the results reveal a negative and significant impact of liquidity on capital structure for Western Balkan banks. During the period before COVID-19, as well as including this period, the impact of liquidity was very significant on the capital structure. This means that the inclusion of the COVID-19 period in the entire period did not have any specific role in the impact of liquidity on the capital structure.

COVID-19 as a dummy variable has a positive but not significant effect on capital structure with a coefficient of 0.015 and probability value equal to 0.261. Earnings volatility as COVID-19, even has positive impact, does not affect capital structure.

Moving on to control macroeconomic factors, GDP has a -0.225 coefficient in relation to capital structure and p-value = 0.000. This finding is in line with (Elnahass et al., 2021) study of the impact of the pandemic on global banking stability. The significance of this variable could imply that a decrease in GDP necessarily implies a decrease in bank capital structure. The same finding applies to the other control variable, Inflation, despite the negative but insignificant impact on the capital structure.

Furthermore, with a coefficient of -0.110, INF (inflation) is negatively significant in relation to capital structure, implying that a 1% decrease in causes a decrease in capital structure of approximately 11 units. The findings are in line with the findings of (Boadi et al., 2016) who discovered that inflation has a negative and significant impact on capital structure when banks do not anticipate future inflation.

5. Conclusion

The objective of the study was to identify the impact of COVID-19 on the bank capital structure and its determinants, using as a sample 40 Western Balkans banks from 2015 to 2020. The significance of primary capital structure determinants including the COVID-19 crisis is also examined. A multiple linear regression model, through a robust fixed effect Huber/White model, was used in the analysis. The research looks at seven bank-specific factors (profitability, leverage ratio, size, collateral, earning volatility, liquidity, and Covid, as a dummy variable). To investigate their impact on capital structure, two control macroeconomic variables (GDP and Inflation) are used. In terms of correlation analysis, our findings are consistent with major theory predictions. Profitability, bank size, collateral, and Covid are all positively related to leverage. On the other hand, the leverage ratio, income volatility, and liquidity are all negatively related to leverage, which can be explained using the pecking order theory's predictions. By regressing the panel data through the Huber/White

Robust Fixed Effects model, we conclude that the comparison of factors affecting the capital structure of commercial banks in the Western Balkans, in the form of profitability, leverage ratio, size, collateral, earnings volatility and liquidity, before and during the COVID-19 pandemic, tend to have significantly different values. While profitability and bank size did not have a significant impact on the capital structure prior to the pandemic, profitability has increased its positive impact in the period including the period of Covd-19, while bank size has increased its negative impact on the capital structure. However, leverage ratio, collateral, earnings volatility, and liquidity had a more significant negative impact before the COVID-19 pandemic, compared to the entire period including the COVID-19 period, indicating that the negative growth of these factors has reduced the capital structure in the commercial banks studied. Despite the fact that Covid, as a dummy variable, has had no significant impact on capital structure, it has had an indirect impact through other factors; it has expressed its impact on this structure. A significant negative impact on the capital structure has also been shown by the two macroeconomic variables taken and the control variable.

In terms of future research, because this study only used 40 banks as a sample from 2015 to 2020 with six variables, it is expected to research the banking sector as a whole over a longer period and with more research variables to improve the quality of research results.

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